Synergy:
Examples of Math/Science and Elementary Collaboration

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The TSPED collaboration

Five Universities and Colleges in Illinois under the Associated Colleges of Illinois (ACI):

- University of St. Francis
- Aurora University
- Dominican University
- Eureka College
- Lewis University
Collaboration with Math and Science Faculty

Aurora University:

- **MTH1210 Mathematics for Elementary Teachers I**  (4 semester hours)
  The first of a two-course sequence for those majoring in elementary education. Topics include set operations, numeration systems, whole number operations, estimation, integer operations, number theory concepts, rational numbers and their forms, radicals and rational exponents, irrational numbers, proportional reasoning, decimals, and percents.
- **No Prerequisite**

- **MTH1220 Mathematics for Elementary Teachers II**  (4 semester hours)
  A continuation of MTH1210. Topics include properties of linear and nonlinear functions, problem solving with and without linear equations, problem solving and representation of systems of linear equations, the relationship between symbolic expressions and graphs of lines, probability, statistics and statistical graphs, fundamentals of geometry, geometric constructions, motion geometry, the Pythagorean Theorem, and measurement.
- **Prerequisite: MTH1210**
Collaboration with Math and Science Faculty

Lewis University:

- **130 Mathematics for Elementary School Teachers (3 semester hours)**
  This course is designed to meet the needs of teachers in the elementary school. Topics include the real number system (whole numbers, integers, rational numbers, real numbers, decimals) and operations with real numbers, number theory (divisibility, prime numbers, composite numbers, perfect numbers, factors), proportional reasoning (ratio, percent), patterns, and basic descriptive statistics.

  - Prerequisite: None

- **140 Geometry for Elementary School Teachers (3 semester hours)**
  This course is designed to meet the needs of teachers in the elementary school. Topics include properties of angles, congruence, similarity, transformations, circles, spheres, triangles, quadrilaterals, constructions, measurement, length, area, and volume.

  - Prerequisite: None.
Collaboration with Math and Science Faculty

University of St. Francis:

- **MATH108 Mathematics for Teachers I** (3 semester hours)
  
Presents mathematical concepts underlying the basic operations for whole numbers, integers, rational numbers, and real numbers. The course includes a study of numeration systems, bases, basic number theory, functions, measurement and geometry.

- **Prerequisites**: H. S. Geometry and C or better in MATH 099 (Intermediate Algebra)

- **MATH 109 Mathematics for Teachers II** (3 semester hours)
  
is a continuation of MATH 108 and is intended for pre-service elementary teachers. The course includes a study of probability, introductory statistics, Euclidean geometry and constructions, the geometry of motion, tessellations, measurement, and Cartesian coordinate graphing.

- **Prerequisite**: C or better in MATH 108.
Collaboration with Math and Science Faculty

University of St. Francis:

PSCI 102 Introduction to Physical Science for Educators(4):

This course has been designed to provide elementary education majors with the background in physical sciences needed to teach elementary science.

While life and earth science concepts will be incorporated whenever possible to demonstrate the relationship between all fields of science, the course will emphasize basic chemical and physical principles and concepts through inquiry.

The course will use laboratory investigations to enhance understanding of physical science concepts and to emphasize the discovery nature of science.

An in-service learning experience has been added to this course to allow students to apply what they have learned by developing and teaching science lessons to 4th or 5th grade students at a partner elementary school.

Three lecture periods and one two hour laboratory section meet each week.
Collaboration with Math and Science Faculty

University of St. Francis:

BIOL 116 Introduction to Life Sciences for Educators (4):

This course has been designed to provide elementary education majors with the background in biology needed to teach elementary life science.

The course will use laboratory investigations to enhance understanding of biological concepts to emphasize the discovery nature of science.

An in-service learning experience has been added to this course to allow students to apply what they have learned by developing and teaching science lessons to 4th or 5th grade students at a partner elementary school.

Three lecture periods and one two hour laboratory section meet each week.
Collaboration with Elementary Faculty: Dual Certification

Lewis University

Field experiences:

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
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</thead>
<tbody>
<tr>
<td>25 hr. Elementary clinical hours</td>
<td>50 hr. Elementary clinical hours with Elementary Methods courses</td>
<td>8 week Elementary student teaching (all day)</td>
</tr>
<tr>
<td>25 hr. Special Ed. clinical hours</td>
<td>50 hr. Special Ed. clinical hours with Special Ed. Methods courses</td>
<td>8 week Special Ed. student teaching (all day)</td>
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Collaboration with Elementary Faculty: Dual Certification

University of St. Francis

Field experiences:

<table>
<thead>
<tr>
<th>Beginning Field Experience (BFE)</th>
<th>Intermediate Field Experience (IFE)</th>
<th>Advanced Field Experience (AFE)</th>
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<tbody>
<tr>
<td>25 hr. Elementary clinical hours</td>
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Synergizing effects:

- Increase in Math scores on state certification tests.
- Advanced knowledge of field and teaching methods owing to completion of elementary semester before special education semester.
- Strong field experience component with 3 full semesters in the classrooms.